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A Novel Gamma-ray Detector for Gravitational Wave Electromagnetic Counterpart Searches in Space

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Gravitational wave burst high energy Electromagnetic Counterpart All-sky Monitor experiment (GECAM) is proposed by Institute of High Energy Physics (IHEP), which is characterized of all-sky 4π γ-rays monitor with two micro-satellite in space. A novel LaBr3 gamma-ray detector readout with large area Silicon Photomultiplier (SiPM) array has been developed for this special application, characterized by only one readout channel, compact, low power, X-ray sensitive to about 5 keV. This presentation will report the detector design and performance.

Summary

the gamma-ray detector for GECAM works well,
3 inch crystals+2 inch SiPM array, one readout channel,
Low energy x-ray to ~5keV,
Linearity is good,
Energy resolution 6.5%@662keV,
Efficiency of 5.9 keV 70%,
Internal radiation <280Hz,
Uniformity <7%,
Power 0.083W.

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